

Amendments to the Claims

1. (Currently amended) In an orthogonal frequency division multiplexing modulation system, a A method of generating a transmission signal, comprising the steps of:

determining non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the determined non-compensation signal points corresponding to orthogonal frequency division multiplexing subcarriers having positive and negative angular frequencies, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis corresponding to real-part signal components, the imaginary axis corresponding to imaginary-part signal components;

determining compensation signal points in the two-dimensional plane on the basis of the determined non-compensation signal points and in response to a signal error caused by digital quadrature modulation if the non-compensation signal points are used, the compensation signal points corresponding to the orthogonal frequency division multiplexing subcarriers having the positive and negative angular frequencies, wherein the compensation signal points corresponding to the orthogonal frequency division multiplexing subcarriers having the positive angular frequencies and the compensation signal points corresponding to the orthogonal frequency division multiplexing subcarriers having the negative angular frequencies are in a predetermined relation ~~the non-compensation signal points and the compensation signal points being point-symmetry;~~

sequentially assigning digital information signal pieces to one of the compensation signal points in response to contents of the digital information signal pieces; and

subjecting the digital information pieces to a modulation process including digital quadrature modulation in response to the assignment given by the assigning step to generate a radio-frequency transmission signal including an orthogonal frequency division multiplexed signal containing the orthogonal frequency division multiplexing subcarriers.

2. (Original) A method as recited in claim 1, wherein the compensation signal points provide compensation for an error in the radio-frequency transmission signal which is caused by one of a phase difference between an in-phase signal and a quadrature signal,

an amplitude difference between the in-phase signal and the quadrature signal, and an error in a quadrature relation between the in-phase signal and the quadrature signal.

3. (Original) A method as recited in claim 1, wherein the compensation signal points provide compensation for an error in the radio-frequency transmission signal which is caused by a timing difference between an in-phase signal and a quadrature signal.

4. (Currently amended) A method of generating a transmission signal, comprising the steps of:

determining first non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis corresponding to real-part signal components, the imaginary axis corresponding to imaginary-part signal components;

determining second non-compensation signal points in the two-dimensional plane without considering the signal error caused by digital quadrature modulation;

determining first compensation signal points in the two-dimensional plane for a first subcarrier on the basis of the first non-compensation signal points and in response to a signal error caused by digital quadrature modulation if the first non-compensation signal points are used, ~~the first non-compensation signal points and the first compensation signal points being point-symmetry~~;

determining second compensation signal points in the two-dimensional plane for a second subcarrier on the basis of the second non-compensation signal points and in response to a signal error caused by digital quadrature modulation if the second non-compensation signal points are used, ~~the second non-compensation signal points and the second compensation signal points being point-symmetry~~, the second subcarrier being equal in frequency to the first subcarrier and being different in polarity from the first subcarrier;

sequentially assigning first digital information signal pieces to one of the first compensation signal points in response to contents of the first digital information signal pieces;

sequentially assigning second digital information signal pieces to one of the second compensation signal points in response to contents of the second digital information signal pieces; and

subjecting the first digital information pieces and the second digital information pieces to a modulation process including digital quadrature modulation in response to the assignments given by the assigning steps to generate a radio-frequency transmission signal containing the first and second subcarriers.

5. (Currently amended) In an orthogonal frequency division multiplexing modulation system, an An apparatus for generating a transmission signal, comprising:

means for determining non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the determined non-compensation signal points corresponding to orthogonal frequency division multiplexing subcarriers having positive and negative angular frequencies, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis corresponding to real-part signal components, the imaginary axis corresponding to imaginary-part signal components;

means for determining compensation signal points in the two-dimensional plane on the basis of the determined non-compensation signal points and in response to a signal error caused by digital quadrature modulation if the non-compensation signal points are used, the compensation signal points corresponding to the orthogonal frequency division multiplexing subcarriers having the positive and negative angular frequencies, wherein the compensation signal points corresponding to the orthogonal frequency division multiplexing subcarriers having the positive angular frequencies and the compensation signal points corresponding to the orthogonal frequency division multiplexing subcarriers having the negative angular frequencies are in a predetermined relation ~~the non-compensation signal points and the compensation signal points being point-symmetry;~~

means for sequentially assigning digital information signal pieces to one of the compensation signal points in response to contents of the digital information signal pieces; and

means for subjecting the digital information pieces to a modulation process including digital quadrature modulation in response to the assignment given by the assigning means to generate a radio-frequency transmission signal including an orthogonal frequency division multiplexed signal containing the orthogonal frequency division multiplexing subcarriers.

6. (Currently amended) In an orthogonal frequency division multiplexing modulation system, an An apparatus for generating a transmission signal, comprising:

first means for storing information representing assignment of states of a signal piece to predetermined signal points responsive ~~predetermined in response~~ to an estimated signal error caused by digital quadrature modulation in the absence of correction, the predetermined signal points being separated into groups including a first group corresponding to a first subcarrier and a second group corresponding to a second subcarrier different in frequency from the first subcarrier;

second means for assigning ~~an~~ a first input information signal piece to one of the signal points in the first group in response to a state of the first input information signal piece according to the information stored in the first means to convert the first input information signal piece into first and second baseband signal pieces; and

third means for subjecting the first and second baseband signal pieces generated by the second means to a modulation process including digital quadrature modulation to convert the first and second baseband signal pieces into a piece of a first modulation-resultant transmission signal from which a signal error caused by the digital quadrature modulation is removed - , the first modulation-resultant transmission signal containing the first subcarrier;

fourth means for assigning a second input information signal piece to one of the signal points in the second group in response to a state of the second input information

signal piece according to the information stored in the first means to convert the second input information signal piece into third and fourth second baseband signal pieces;

fifth means for subjecting the third and fourth baseband signal pieces generated by the fourth means to a modulation process including digital quadrature modulation to convert the third and fourth baseband signal pieces into a piece of a second modulation-resultant transmission signal from which a signal error caused by the digital quadrature modulation is removed, the second modulation-resultant transmission signal containing the second subcarrier; and

sixth means for combining the first and second modulation-resultant transmission signal into an orthogonal frequency division multiplexed signal having the first and second subcarriers.

Please add the following new claim.

7. (New) In an orthogonal frequency division multiplexing modulation system, a method of generating a transmission signal, comprising the steps of:

determining first non-compensation signal points in a two-dimensional plane without considering a signal error caused by digital quadrature modulation, the two-dimensional plane being defined by a real axis and an imaginary axis, the real axis corresponding to real-part signal components, the imaginary axis corresponding to imaginary-part signal components;

determining second non-compensation signal points in the two-dimensional plane without considering the signal error caused by digital quadrature modulation;

determining first compensation signal points in the two-dimensional plane for each of first subcarriers on the basis of the first non-compensation signal points and in response to a signal error caused by digital quadrature modulation if the first non-compensation signal points are used, the first subcarriers having different frequencies respectively;

determining second compensation signal points in the two-dimensional plane for each of second subcarriers on the basis of the second non-compensation signal points and in response to a signal error caused by digital quadrature modulation if the second non-

compensation signal points are used, the second subcarriers being equal in frequency to the first subcarriers respectively and being different in polarity from the first subcarriers;

sequentially assigning first digital information signal pieces to one of the first compensation signal points in response to contents of the first digital information signal pieces;

sequentially assigning second digital information signal pieces to one of the second compensation signal points in response to contents of the second digital information signal pieces; and

subjecting the first digital information pieces and the second digital information pieces to a modulation process including digital quadrature modulation in response to the assignments given by the assigning steps to generate a radio-frequency transmission signal including an orthogonal frequency division multiplexed signal containing the first and second subcarriers.